

FREQUENTLY ASKED QUESTIONS ABOUT THE TTP PHD QUALIFYING EXAMINATION (QE)

Pat Mokhtarian, TTP Chair and Graduate Adviser, May 21, 2009

Note to transportation students in CEE and other programs: Although I wrote this document specifically for the TTP program, probably at least 97% of it applies to CEE, and I would imagine that > 90% of it applies to other programs although I am less familiar with those. If you are not in TTP you might want to confirm your understanding with your major professor, but I think you will still find this document helpful.

What is the QE and what is its purpose?

The QE is the last big hurdle to finishing the PhD before the dissertation itself. It is taken after all required coursework is completed (all incompletes finished, etc.), and you must have at least a 3.0 GPA in your graduate program coursework. In TTP (as in many other programs), you also need to have a dissertation proposal completed and approved by your major professor before taking the exam. As far as the campus is concerned, the exam can be either oral or written or some of both, but so far in TTP the exam has been entirely oral. A three-hour time period should be allotted. The exam is administered by a five-person committee, chosen by you in consultation with your major professor and in keeping with the program's guidelines

(<http://ttp.ucdavis.edu/TTPStudentManualBody.htm#Committees>), and must be approved by the Graduate Adviser and by Grad Studies.

The main purpose of the QE is to ascertain whether or not you are adequately prepared to undertake and successfully complete your dissertation research, and by implication to eventually receive a PhD. We interpret "preparation" to mean two things: (1) have you mastered key topics (knowledge, skills, and integration) that a PhD in transportation generally and TTP specifically would be expected to know? and (2) are you likely to successfully complete a dissertation worthy of a PhD in TTP from UCD?

As these two points indicate, the exam will cover both your coursework and your dissertation proposal, in proportions that will vary from exam to exam in unpredictable ways. Thus, a deep understanding of your research project does not, by itself, represent sufficient preparation for the qualifying examination -- you must also remember something about your coursework! (See below for "What topics will the coursework portion of the exam cover?"). With respect to the second point, reading the proposal and questioning you on it will help determine (a) Is the topic and its treatment worthy of a PhD dissertation (as opposed to, e.g., a master's thesis, or a consultant's report)? (b) Does the student have sufficient technical knowledge to be able to tackle the subject appropriately? and (c) Does the proposal present a realistic and appropriate approach to the subject (or, instead, does it try to do too much? does it ignore likely obstacles or risks? does it rely on data or resources not likely to materialize?)?

There are two secondary but very useful purposes of the exam: (1) To get you to review key areas of coursework, which allows that knowledge to be better remembered and

better integrated with other areas of knowledge; and (2) to provide you with expert constructive feedback on your dissertation research at a critical early stage, in a group setting where various faculty members can hear and interact with each others' comments as well as with you. At its best, this can generate considerable positive synergy that is not possible when you only meet with faculty one at a time.

Passing the QE is synonymous (upon completion of the appropriate form, "[Application for Candidacy for the Degree of Doctor of Philosophy](#)") with "advancing to candidacy for the PhD", and after you pass, you can be referred to as a "PhD candidate", not just a "PhD student".

What are the possible outcomes of the QE?

There are four possible outcomes on the first try: (1) pass, which is unconditional, i.e. no requirements can be placed on you with this outcome; (2) fail, which terminates your doctoral studies in TTP (it does not automatically terminate your studies at UCD -- you could apply to, and be accepted into, another graduate program); (3) not pass; and (4) no exam (if at any time during the examination the committee determines that you are unable to continue the examination, whether due to illness or other extreme circumstances, the committee may judge the outcome as "no exam" and must notify Graduate Studies of their decision and the circumstances).

A "not pass" outcome must be accompanied by specific requirements, generally including a time frame, which if met satisfactorily, would constitute a "pass". These requirements could include things like (but not limited to) (a) taking additional course(s) to improve your preparation to conduct the dissertation; (b) retaking part or all of the exam (say you couldn't answer some questions the committee thought were important to having a PhD in TTP); and/or (c) revising the proposal to the satisfaction of the committee (to address specific deficiencies identified). On the second try, there are only two possible outcomes: pass or fail. That is, for your own protection, you cannot be "not passed" indefinitely!

In the case of a not-pass or fail outcome, you have the right to appeal (contact Graduate Studies for the procedure required).

Unanimity in the recommended outcome is highly desirable and usually achieved, but not essential. I'm a little fuzzy on this part because it's only happened once in my experience, but as I recall, when the vote is split, both sides indicate reasons for their votes (this can be in a memo from the chair that is completed a little while after the exam). I believe Grad Studies then reviews the case and renders a final verdict.

Upon completion of the qualifying examination, the Chair of the qualifying examination committee indicates the results on the form titled "Report on Qualifying Examination for Admission to Candidacy for the Degree of Doctor of Philosophy", and returns it to the Graduate Assistant, who then sends it to Graduate Studies.

How often does each outcome occur? (Does anyone ever fail?)

My subjective guess is that 80+% of takers (in the two largest transportation programs at UCD -- TTP and CEE) pass on the first round. I cannot ever remember anyone failing on the first round, and indeed it's difficult to imagine that a first-time QE performance would be SO bad that a committee felt no redemption was even possible. Normally, screening out would occur well before that point, anyway!

A not-pass outcome is of course disappointing, but as you can see it does occur, with some regularity. It's important to understand that such an outcome can mean a range of different things. At the lower end, it can certainly mean that the committee has grave doubts about your ability to successfully complete the PhD. You should entertain that possibility yourself, as objectively as you can, and discuss it with your major professor and other trusted academic mentors after the initial emotion has subsided. At the higher end, it can mean that the committee in fact feels you are perfectly capable of succeeding, but simply believes that a few important but fixable problems should be addressed. Thus, a not-pass outcome is no shame, and many (probably most) students transcend a not-pass outcome to successfully finish the degree and go on to solid careers in the profession. If it's any comfort to you, I am happy to divulge that I am one of them!

So, as I said, many if not most not-pass outcomes end in a pass on the second time around. I can only think of one case in my many years of experience in which a second try ended in a fail. It was a case in which the student's research and proposal were unanimously approved by the committee, but s/he could not demonstrate mastery of some basic principles that the committee thought every transportation PhD (in CEE, as it happened) should know. The instructions for what to study for the second take of the exam were explicit, ample time was given, and the student still could not demonstrate the expected knowledge.

More common than an outright fail, then, is the case in which a not-passed student simply walks or drifts away from the program at that point, and no longer makes progress toward finishing. In some cases, as implied above, this is probably the appropriate outcome -- to be blunt but obvious, screening out those who are not likely to finish successfully is one main purpose of the exam (as discussed above). However, before assuming you are one of those people, I strongly encourage you to talk with one or preferably several faculty mentors, seeking their candid feedback on your strengths and weaknesses.

What do I need to do to prepare for the exam?

Administratively:

- (1) Consult with your major professor (and potentially the TTP Grad Adviser, if you have any doubts) about the composition of your committee. Select your committee, getting agreement from each member to participate.
- (2) Complete the "Application for Qualifying Examination" form, <http://www.gradstudies.ucdavis.edu/FORMS/qx.pdf>, and obtain the necessary signatures. When you bring or send it to the TTP Grad Adviser for approval, you should attach your

signed final Program of Study

(<http://ttp.ucdavis.edu/Forms/Program%20of%20Study%20PhD%20Form.PDF>) and your completed Prerequisites form (<http://ttp.ucdavis.edu/Forms/TTPPrerequisiteForm.PDF>).

(3) Return the form to the Graduate Assistant, who will keep a copy for the files and submit it to Graduate Studies. Be sure to leave at least three weeks for Grad Studies to process your application.

(4) Receive the notice of Admission to the Qualifying Examination from the Dean of Graduate Studies. Under no circumstances should you take the Qualifying Examination before receiving this notice.

Logistically:

(1) Set the date and time (again, a three-hour block) in consultation with your committee -- and good luck with that! If you are an international student, you'll want to be aware of campus deadlines for advancing to candidacy in order to obtain remission of your non-resident tuition starting with the quarter after you advance. You must be registered the quarter in which you take any portion of your Qualifying Examination, except for the summer.

(2) Find a room in which to hold the exam (often the ITS conference room), and notify your committee of the location.

(3) It's OPTIONAL but customary for the student to provide light refreshments of your choice for the committee during the exam. Trust me, it will not affect the outcome should you be unable or unwilling to do this, but, on the other hand, it's human nature to be in a better mood when not hungry...

(4) Bring 5 copies of your program of study to the exam (or in advance, if asked). Occasionally it becomes desirable to check at the beginning or while the exam is in progress whether you've had such-and-such a class (and how well you did in it). Also bring a copy of the form that shows which committee members will be covering which topics.

Substantively:

(1) Complete your dissertation proposal to your major professor's satisfaction, and circulate it to the committee. It's preferable to leave a month or so for the committee's review, but it can be shorter if they are all agreeable. It's a good idea to coordinate with them when the time is getting close for you to circulate the proposal, to see if anyone is going to be away during the critical window, and/or needs the proposal by a certain date. It's also a good idea to try and touch base with them after they've had a chance to read the proposal and before the exam itself, to see if they have any major concerns that you'd rather find out about BEFORE the exam than DURING it. Due to schedule constraints, this may not always be possible, but it doesn't hurt to try. Sometimes they will even tell you ahead of time what they are going to ask!

(2) Prepare a presentation on your dissertation proposal. You should plan on taking **20 MINUTES** for this presentation -- similar to the amount of time you'd have at a large

professional conference (if there are lengthy interruptions during your talk, the chair may extend the time accordingly). Yes, we know you'd like to take an hour on this part, to reduce the time available to ask you about topics with which you may be less familiar, but if the chair is doing her/his job, that won't work! Obviously, 20 minutes will force you to identify the most important parts of your proposal. Don't belabor the introduction and literature review, so as to allow ample time to get into the meat of the problem and your approach to it. Of course you'll be getting assistance from your major professor in preparing the talk. It's also common to give an informal dry run of your talk in front of your professor(s) and some students (who and how many are up to you), to get some friendly feedback in advance.

(3) Study your relevant coursework (see "What topics will the coursework portion of the exam cover?", below).

What topics will the coursework portion of the exam cover?

There are no standard or universal topics or questions for the exam. Theoretically, it is intended to be a broad examination over your entire Program of Study. The composition of the committee should reflect both tracks of the program (technology and policy). Beyond that, however, in reality, the content of the exam will depend on what your particular committee members want to ask at that particular time. You should certainly check with your committee members well in advance, to see what they will tell you about what they plan to cover. You'll naturally have some idea, based on your knowledge of their expertise. Beyond that, they will probably indicate specific courses in your Program of Study that they will focus on, and they may give some general guidelines with respect to the level of question they would ask. Some faculty have favorite questions that they nearly always ask at QEs, and they may even tell you those questions in advance!

To me, it is ideal when questions on coursework can be oriented toward the dissertation proposal. However, some committee members may have little or no expertise on your research topic, and will focus almost exclusively on coursework. The converse may also be true, although far less common. In general, the committee is free to touch on any subject that it deems relevant or important -- whether or not it relates to your proposal, as long as it's in your Program of Study; and whether or not it's in your Program of Study, as long as it relates to your proposal. The qualifying examination may range over fundamental undergraduate-level material as well, especially if weaknesses are perceived as the qualifying examination progresses.

On the "Application for Qualifying Examination", where it asks for "The subjects on which the applicant will be examined", it suffices to say "transportation technology" and "transportation policy". You can get more creative if you want, like "statistics", "urban planning", "marketing" -- but it's not necessary.

What happens during the exam?

Once everyone is assembled, the QE chair will ask you to leave the room while the

committee discusses you for a few minutes. Normally your major professor will start off by giving a little background on you and her/his interactions with you, then other committee members will chime in with their experience. This serves to put the exam in context. Sometimes the committee will agree on a particular order of questioning at this point; sometimes they'll just go around the room in seating order when the time comes. If this part seems to take a long time, and if you perhaps hear laughter coming from the room -- it may have nothing to do with you at all, I'm sorry to say! Faculty members who haven't seen each other in a while may be catching up a little bit, getting acquainted with unfamiliar members of the committee, recounting some recent amusing incident, etc. Don't worry!

The chair will then call you back into the room. S/he'll ask you to give your presentation, reminding you of the time guidelines, and may indicate if questioning will proceed in a certain order. (This order is not binding -- one member may "tag on" to another member's question, and if you're really lucky they'll start discussing things among themselves and bypass you altogether for a while -- but eventually the chair will make sure that everyone has gotten more or less equal time and/or the amount of time they wanted, to ask questions).

By way of getting you started and relaxing you a bit, the chair will usually ask you to first tell the committee a bit about yourself -- how you got interested in transportation, why you came to UC Davis, what you plan to do when you finish -- that sort of thing.

Then your research presentation. Normally the committee will try to hold substantive questions till the end, but you may get questions of clarification throughout.

Then the substantive questioning begins. The general plan is that each member gets about equal time, in turn, but again, in practice there may end up being a lot of back-and-forth interaction. The order is often such that questions related to your dissertation research come first (to follow naturally from your presentation) and coursework questions later, but there are no hard and fast rules.

After the questioning is completed or time runs out, whichever comes first, the chair will excuse you a second time while the committee deliberates. Each member is given a chance to react to your performance and give her/his recommended outcome. See above for the possible outcomes. If "not pass" is to be the outcome, the committee will determine the stipulations for later changing it to a "pass".

Once the deliberations have concluded, the chair will call you back in and give you the outcome. Regardless of which outcome (i.e. even if you pass), this is generally accompanied with some constructive counseling (from the chair on the group's behalf, potentially with contributions from other members of the committee) about any serious weaknesses perceived in the course of the exam. Although you may find it hard to concentrate at the time, such counsel can be extremely valuable. In any case, your major professor will often give you additional feedback later, and I strongly encourage you to proactively solicit such feedback if it is not automatically offered.

Summing up, a typical timetable for the QE might be:

5 mins. -- assembly

5-10 mins. -- discussion of student etc. (student excused)

25 mins. -- student's presentation, including self-intro

100 mins. -- committee questions, about 20 minutes each

15 mins. -- discussion of recommendation (student excused)

10 -15 mins. -- presentation of outcome and other feedback